REMARKS

Entry of this amendment as well as reconsideration and allowance are respectfully requested.

Applicant notes that the Examiner checks several boxes on the PTOL-326 form regarding priority under 35 U.S.C. §119. This application is U.S. national stage of a PCT application filed under 35 U.S.C. §371.

Claims 3 and 6 stand rejected under 35 U.S.C. §112, second paragraph. This rejection is respectfully traversed.

These claims have been amended to recite that the method is applied to "a system that complies with an IEEE 802.11standard." There are several IEEE 802.11 standards. A person of ordinary skill in the art would understand what it means for a system to comply with one of those IEEE 802.11 standards. The fact that a particular one of the IEEE 802.11 standards, e.g., 802.11(b), 802.11(g), etc., is not specifically recited does not make these claims indefinite. The Examiner is reminded that a claim is only indefinite if it "is insolubly ambiguous." *Exxon Research & Eng'g Co. v. United States,* 265 F.3d 1371, 1375 (Fed. Cir. 2001). That is certainly not the case in claims 3 and 6. Withdrawal of the rejection of claims 3 and 6 is requested.

Claims 1, 7, and 8 stand rejected under 35 U.S.C. §112, first paragraph as allegedly not complying with the written description requirement. This rejection is respectfully traversed.

The written description test is not a literal word-for-word support in the specification test. Rather, to satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. See, e.g., *Moba, B.V. v. Diamond Automation,*

Inc., 325 F.3d 1306, 1319 (Fed. Cir. 2003). The Examiner has the burden of presenting evidence or reasoning to explain why persons skilled in the art would not recognize in the original disclosure a description of the invention defined by the claims. *In re Wertheim*, 541 F.2d 257, 262-63 (CCPA 1976). Each claim limitation must be expressly, implicitly, or inherently supported in the originally filed disclosure. The claimed subject matter need not be described "in haec verba" in the original specification in order to satisfy the written description requirement. See, e.g., *In re Wright*, 866 F.2d 422, 425 (Fed. Cir. 1989). Instead, the analysis is whether one skilled in the art would recognize upon reading the specification that the new language reflects what the specification shows has been invented. *Eiselstein v. Frank*, 52 F.3d 1035, 1039 (Fed. Cir. 1995).

Here, the Examiner does not sustain the burden required by *In re Wertheim*. The sole reasoning is that the amended language is not explicitly recited in the specification. But as the Federal Circuit has found in *In re Wright* and other cases, such explicit recitation is not required. The Examiner objects to the word "determining" in the context of the following step recited in claim 1: "determining if the second node is already listed in the table maintained by the first node."

The specification at page 2, line 30-page 3, line5 states: "The method comprises the step of letting the first node receive a first signal from a second node, and additionally comprises the step of letting the first node analyse the signal received from the second signal [sic, node]. If the second node is already present in the table maintained by the first node..." Here, the text indicates that the first node analyzes signals received from another node. "Determining" is supported by "analyzing." Page 4, lines 7-10 states: "Node A, for example, in its capacity as server and/or router maintains a list of neighbouring nodes which can assist node A in routing

messages. Nodes are added or maintained on this list on the basis of messages which are received form these nodes." Here, it is clear that a server and/or router makes many determinations in its normal functioning. Page 6, lines 14-16 states: "If, however, the message is from an "accepted" protocol, node A will see if the sending node is one which is already present in the routing table maintained by node A (block 20)." The language "node A will see if" would be readily understood to mean that node A will "determine if." One skilled in the art would recognize upon reading the specification at that Node A is determining and that the term determining reflects what the specification shows has been invented.

Next, the Examiner challenges the bolded terms in "comparing the signal strength **of the first signal** to a first predetermined **signal strength threshold**." This language is clearly supported, for example, on page 6, lines 14-17: "If, however, the message is from an "accepted" protocol, node A will see if the sending node is one which is already present in the routing table maintained by node A (block 20). If this is so, **the signal level, SNR, of the received signal, will be tested against a first threshold level**, (block 40)." The SNR (signal-to-noise ratio) is a signal strength measure. Comparing SNR to a threshold means that the threshold is an SNR threshold, and thus, a signal strength threshold.

The Examiner further challenges the bolded text in: "if the signal strength of the first signal exceeds the second predetermined signal strength threshold, **adding the second node to the table**." That text is clearly supported, for example, on page 6, lines 23-32: "Reverting now to block 20, if the sending node is not one which is present in the routing table maintained by node A, the message is considered to originate from a node which is "new" to the routing table of node A. The **SNR of the message is then tested against a second threshold level**, which is higher than the first threshold level used for messages from 'existing nodes... If, however, the

message's SNR does exceed the second threshold level, **the node is added to the routing table maintained by node A**."

The Examiner also questions the bolded language in "if the signal strength of the first signal does not exceed the second predetermined signal strength threshold, **discarding the first signal and continuing to not list the second node in the table**." That text is clearly supported, for example, on page 6, lines 23-30: "Reverting now to block 20, if the sending node is not one which is present in the routing table maintained by node A, the message is considered to originate from a node which is "new" to the routing table of node A. The SNR of the message is then tested against a second threshold level, which is higher than the first threshold level used for messages from "existing" nodes. If the message from the "new" node has an SNR which does not exceed or is equal to the second threshold level, **the message is discarded** (block 80)." The phrase "and continuing to not list the second node in the table" is clearly understood from this context. The specification clearly states in the just-quoted portion "if the sending node is not one which is present in the routing table maintained by node A." So, that second (new) node not being present in the table is clearly not listed in the table. If the message from the second node is discarded, then clearly it is not added, which is also clear from the entire discussion on page 6 of the specification.

The Examiner objects to the following language from claims 7 and 8: "the first and second predetermined signal strength thresholds correspond to first and second predetermined signal-to-noise ratios (SNRs)." But there is express support for this language. Page 6, lines 16-17, for example, states: "If this is so, **the signal level, SNR, of the received signal, will be tested against a first threshold level**, (block 40)." Page 6, lines 25-26, for example, states: "The **SNR of the message is then tested against a second threshold level**." Those skilled in

this art clearly understand that the SNR stands for signal-to-noise ratio, which is a signal strength measure. Comparing a SNR to a threshold means that the threshold is an SNR threshold.

One skilled in the art would recognize upon reading the specification at that the language bolded by the Examiner was supported in the specification and in Figure 2 and reflects what the specification shows has been invented. The inventors were clearly in possession of the claimed technology at the time the application was filed. Withdrawal of the rejection is requested.

Claims 1-8 stand rejected under 35 U.S.C. §103 based on Nuemiller (previously-applied), Liu (newly-applied), and Balogh (previously-applied). This rejection is respectfully traversed.

In the ad hoc mode, a node A may receive HELLO or similar probing/scanning messages from a node B without node B receiving user packets from node A because certain kinds of hardware treat broadcast and uni-cast packets differently. The problem is that an ad hoc node may try to establish communication routes through the ad hoc network via one or more nodes that do not route packets. Another problem is that even when it is possible to route user packets to a neighboring node, the quality of the link between the neighboring nodes can be very poor, which may result in errors, retransmissions, lower throughput, and perhaps, route failure.

The technology in claims 1 and 4 relates to WLAN ad hoc networks. A node maintains a list or table of other nodes within the ad hoc network which can be used for forwarding messages within that network. The received signal strengths or qualities (e.g., SNR) of signals from nodes in the list are analyzed differently from the received signal strengths or qualities from nodes not on the routing node list. The received signal strength or quality from a listed node is allowed to vary somewhat within a predetermined range above a first threshold value to accommodate normal fluctuations associated with a moving node. But if the received signal strength or quality of the listed node falls below the first threshold level, then that node is removed from the list. In

contrast, the received signal strength or quality of an unlisted node must exceed a second higher threshold level in order for that unlisted node to be added to the routing table. This arrangement provides a robust system where the list of nodes in the ad hoc routing table is updated based on changing channel conditions to ensure good signal quality routing connections.

Nuemiller (US 7,180,875) teaches listing many nodes including nodes having a low SNR. See, for example, col. 6, lines 17-43. Listing "weak" nodes contrasts with what is described in claims 1 and 4 where the first node lists strong candidates in its ad hoc network routing table so that packets from the first node are routed to one or more "strong" neighboring nodes, each strong neighboring node in turn having a list of strong candidates neighboring it, and so forth. The Examiner cites col. 7, lines 55-59 as allegedly teaching "if the second node is already listed in the table maintained by the first node." That text at col. 7, lines 55-59 states: "Overall, a mobile terminal 102 in an ad-hoc network 100 will usually maintain a collection of routes to any given host, so that if one route is lost the other routes can be used. The embodiments of present invention take advantage of this knowledge in a pro-active manner." It is not understood how this text describing a collection of routes teaches determining if the second node is already listed in the table maintained by the first node.

In addition, the Examiner admits that Nuemiller also lacks "adding the second node to the table" and supplies Liu for this missing feature. Liu describes maintaining network configuration hierarchy information and establishing routes and transferring information between nodes in ad-hoc data communication networks using on-demand multicast and unicast techniques. Figure 4 shows adding a new neighbor sender to a new neighbor list.

But Liu, like Nuemiller, lacks the claimed first and second threshold comparisons. The Examiner already properly admits this for Nuemiller. Liu compares the value of a beacon status

message counter to a threshold value, and depending on the result, the counter continues to count or a node processor determines that new neighbors may have been discovered or that a neighbor set has changed. See col. 14, lines 47-62. But this thresholding Liu is not comparing signal strengths with first and second signal strength thresholds coupled with using the threshold comparisons to decide how to handle nodes already listed in the table and nodes not listed in the table.

For these threshold conditions, the Examiner also relies on Balogh. Balogh's main goal is to keep "the connection in the same network as long as possible." See [0005]. Passing reference is made in [0035] that scanning of stored information sets may be done for ad-hoc mode networks with the comparison being of terminal identities to information sets. Balogh's main focus is on selecting a first access point that has "the same network name as the currently serving access point" and a second access point with "a different network name" are selected. In [0039], Balogh states: "The terminal MS then checks 402 the network names of the available access points based on the collected information. According to an embodiment, the MS compares the network names of available access points advantageously to the network name settings of the stored information sets and drops access points with network names not described in any of the network name settings 403." As shown in Figure 4, a first access point with the same network name is selected (step 404), and a second access point with a different network name is selected (step 405).

The "connection attributes" of the first and second access points are compared to each other. The signal level is one connection attribute associated with the first and second access points [0010]. As explained in [0040]: "If only signal levels are considered, the signal levels of different access points are simply compared and the access point with the highest signal level is

the access point with the best connection attributes." The Examiner does not point out what specifically in Balogh corresponds to the claimed first and second predetermined signal strength thresholds.

There is a discussion of signal strength comparison in [0010]: "Yet in one embodiment of the invention, the connection attributes are determined based on signal levels of available access points. The first and the second access point having the highest signal levels are selected. The signal levels of the first and the second access point are compared and it is checked if the difference of signal levels of the first access point and the second access point is above the pre-determined signal level limit. This way it is possible to select an access point that is typically closest to the terminal." But it is clear that it is the difference that is compared to the limit to select the closest access point. In contrast, it is the signal strength of just one signal, the first signal, that is compared to one of two different thresholds depending on whether the second node is listed in the table maintained by the first node or not.

Performing one relative comparison where the signal strengths of a first access point signal and a second access point signal are compared to the each other as in Balogh is not the same as performing two separate comparisons as claimed where the signal strength of the first access point signal is compared to a first predetermined signal strength threshold and the signal strength of the second access point signal is compared to a second predetermined signal strength threshold greater than the first predetermined signal strength threshold.

The Examiner also identifies paragraph [0050] in Balogh as allegedly teaching a second comparison level is greater than a first comparison level. Paragraph [0050] relates to a user interface which allows a user to accept a new connection and is repeated here for convenience: "The user interface means UI generally comprise a keyboard, a display, a loudspeaker and a

microphone, which are not presented in FIG. 5. With the user interface means UI, the control unit CPU may according to a preferred embodiment inform the user about the second access point with better connection attributes and the user may allow the connection. By using the user Interface UI, It Is advantageously possible to view and change the settings of the stored information sets and give further instructions to the control unit CPU. According to an embodiment, the user may also form new information sets or modify already existing ones by using the user interface UI." There is no reference to any predetermined comparison levels let alone to the two separate comparisons to the first and second predetermined signal strength thresholds where the second predetermined signal strength threshold is greater than the first predetermined signal strength threshold.

In addition, claim 1 relates to maintaining a table of other nodes within the network which can be used for forwarding messages within an ad hoc network using certain criteria for adding and dropping nodes in the table. That is different than deciding which access point to use in order to access a network, which is what Balogh describes.

In addition to all three references lacking the claimed comparisons to the claimed first and second thresholds, none of those references teaches or suggests determining which one of the two threshold comparisons to make depending on whether a node is on a routing list or not.

Regarding the rejection of claims 7 and 8, the Examiner cites col. 7, line 10-col. 8, line 9 of Nuemiller. Claims 7 and 8 recite: "wherein the first and second predetermined signal strength thresholds correspond to first and second predetermined signal-to-noise ratios (SNRs)." The only text that in this section from Nuemiller that discusses signal-to-noise ratio is col. 7, lines 59-66 repeated here for convenience: "Commonly used channel modulation methods such as QPSK or QAM-16 have bit error rates that are directly related to the signal-to-noise ratio of

the channel being used. Typical measurements in CDMA networks show high speed mobiles will often experience 10^{-2} BERs. With reference to FIG. 6B, applying macroscopic selection and diversity, for example, three independent 10^{-2} links can be combined to form a 10^{-6} BER link." This text simply describing the signal-to-noise ratio of the channel being used. There is no teaching of first and second predetermined signal strength thresholds correspond to first and second predetermined signal-to-noise ratios (SNRs).

The application is in condition for allowance. An early notice to that effect is respectfully requested. The Examiner is invited to contact the undersigned to set up an interview if the Examiner believes one would assist in furthering the prosecution of this application.

Respectfully submitted,

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